

Report - Draft
Salt River Pima-Maricopa Indian Community
5-Year Air Monitoring Network Assessment



Prepared by
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September 2015

PUBLIC NOTICE

August 27, 2015

Salt River Pima Maricopa Indian Community 5-Year Air Monitoring Network Assessment

**Community Development Department (CDD)
Environmental Protection & Natural Resources Division (EPNR)
Air Quality Program (AQP)**

Notice is given to the public for an opportunity to review and comment on the Salt River Pima Maricopa Indian Community (SRPMIC) 5-Year Air Monitoring Network Assessment. The U.S. Environmental Protection Agency (EPA) requires State, Tribal and Local monitoring agencies to conduct an assessment of their air quality monitoring network every five years, 40 CFR Part 58.10 (d). The assessment report reviews the SRPMIC air monitoring network description, geographic and history, data and network evaluation as it pertains to four air quality monitoring sites for the areas compliance with the National Ambient Air Quality Standard (NAAQS).

A copy of the draft document prepared by SRPMIC is available for review at CDD/EPNR website www.srpmic-nsn.gov/government/epnr/ and hardcopy may be request at SRPMIC CDD/EPNR office at Two Waters Building, 3rd Floor, 10005 East Osborn Road, Scottsdale, AZ 85256.

All public comments can be submitted to CDD/EPNR, 10005 East Osborn Road, Scottsdale, AZ 85256 or e-mail comments to Chris Horan christopher.horan@srpmic-nsn.gov and Stan Belone stan.belone@srpmic-nsn.gov on or before September 28, 2015.

Executive Summary

This document provides the Salt River Pima-Maricopa Indian Community (SRPMIC or Community) 5-year Air Monitoring Network Assessment. 40 Code of Federal Regulations (CFR) Part 58.10 (d) requires an air monitoring network assessment to be conducted on a 5-year cycle. This evaluation assessed the air quality monitoring system consisting of State and Local Air Monitoring Stations (SLAMS) operated under tribal authority. SRPMIC is not required to operate National Core (NCore) or Photochemical Assessment Monitoring Station (PAMS) air monitoring sites.

The monitoring assessment must address the following:

1. Document that the network meets the monitoring objectives defined in Appendix D to 40 CFR Part 58.
2. Evaluate the need for new monitoring sites.
3. Evaluate if existing sites are no longer needed and can be terminated.
4. Determine if new technologies are appropriate for incorporation into the ambient air monitoring network.
5. Consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma).
6. For any sites that are being proposed for discontinuance, consider the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies.
7. For PM_{2.5}, the assessment also must identify needed changes to population-oriented sites.

SRPMIC operates air quality monitors that record ambient concentrations of several criteria pollutants. Criteria pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to health, and correspondingly defined a National Ambient Air Quality Standard (NAAQS).¹ The standards are intended to protect public health and welfare by setting limits on the allowable concentration of each pollutant in the ambient air.

The criteria pollutants are particulate matter (PM) less than or equal to 10 microns (PM₁₀), particulate matter less than or equal to 2.5 microns (PM_{2.5}), ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and lead (Pb).

¹ See Clean Air Act ("CAA") §§ 108,109, and 40 CFR §50.1 *et seq.*

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1.0 Background Information

1.1 Network Description – PM₁₀, PM_{2.5}, Ozone

A SLAMS (Tribal) network consists of ambient air monitoring sites that provide data to meet required monitoring objectives. All SRPMIC air monitoring sites have the basic monitoring objective of NAAQS comparison. Monitoring sites generally correspond to a spatial scale identified in 40 CFR Part 58 Appendix D. Spatial scale of representativeness is described in terms of the physical dimension of the air parcel nearest to a monitoring station throughout which actual pollutant concentrations are reasonably similar. Table 1.1 lists these spatial scales.

Table 1.1 Spatial Scales

Spatial Scale	Dimension
Microscale	Several meters up to 100 meters
Middle scale	100 meters up to 0.5 kilometers
Neighborhood Scale	0.5 kilometers to 4.0 kilometers
Urban Scale	4 kilometers to 50 kilometers
Regional Scale	Tens to hundreds of kilometers

40 CFR Part 58 Appendix D also describes the relationship between the site type and the spatial scales that are generally most appropriate for each site type. Table 1.2 summarizes this relationship.

Table 1.2 Site Type and Scales

Site Type	Appropriate Siting Scales
Highest Concentration	Micro, Middle, Neighborhood (Sometimes Urban)
Population	Neighborhood, Urban
Source Impact	Micro, Middle, Neighborhood
General / Background	Neighborhood, Urban, Regional
Regional Transport	Urban / Regional
Welfare-related Impact	Urban / Regional

40 CFR Parts 50 and 53 define Federal Reference Methods (FRMs) and Federal Equivalent Methods (FEMs), which provide precise methodology for quantifying ambient concentrations of air pollutants. FRMs are monitoring methods that are associated with the NAAQS for the pollutant described in the appendices to 40 CFR 50 and determined by EPA to be FRMs. FEMs are alternative monitoring methods that have been designated by EPA as obtaining equivalent results when compared to the FRM, as determined by 40 CFR 53. An additional option for air monitoring agencies is the Approved Regional Method (ARM). This designation requires the applying agency to conduct specific field testing and evaluation demonstrating that the method meets Class III precision and accuracy requirements listed in Subpart C of 40 CFR Part 53.

SRPMIC uses FRMs to collect filter based PM₁₀ and PM_{2.5} samples and FEMs for continuous PM₁₀ and ozone. A PM_{2.5}FEM is expected to be operational in 2016. SRPMIC does not have approval for any ARMs.

Two types of PM₁₀ monitors are used throughout the monitoring network: 1) filter based medium volume monitors, and 2) Tapered Element Oscillating Microbalance (TEOM) monitors which measure PM₁₀ continuously.

Two types of PM_{2.5} monitors will be used throughout the monitoring network: 1) filter based medium volume monitors equipped with the appropriate size fractioning device (currently operating), and 2) a TEOM Filter Dynamics Measurement Systems (FDMS) FEM which measures PM_{2.5} continuously (planned to be operational in 2016).

As described in the SRPMIC “2014 SRPMIC Air Monitoring Network Review,” the monitoring network meets the monitoring objectives defined in Appendix D to 40 CFR Part 58. Table 1.3 is a summary of SLAMS monitoring sites operated by SRPMIC. A location map of the Community and monitoring site locations are presented in Figures 1 and 2, respectively.

Table 1.3 SLAMS Summary

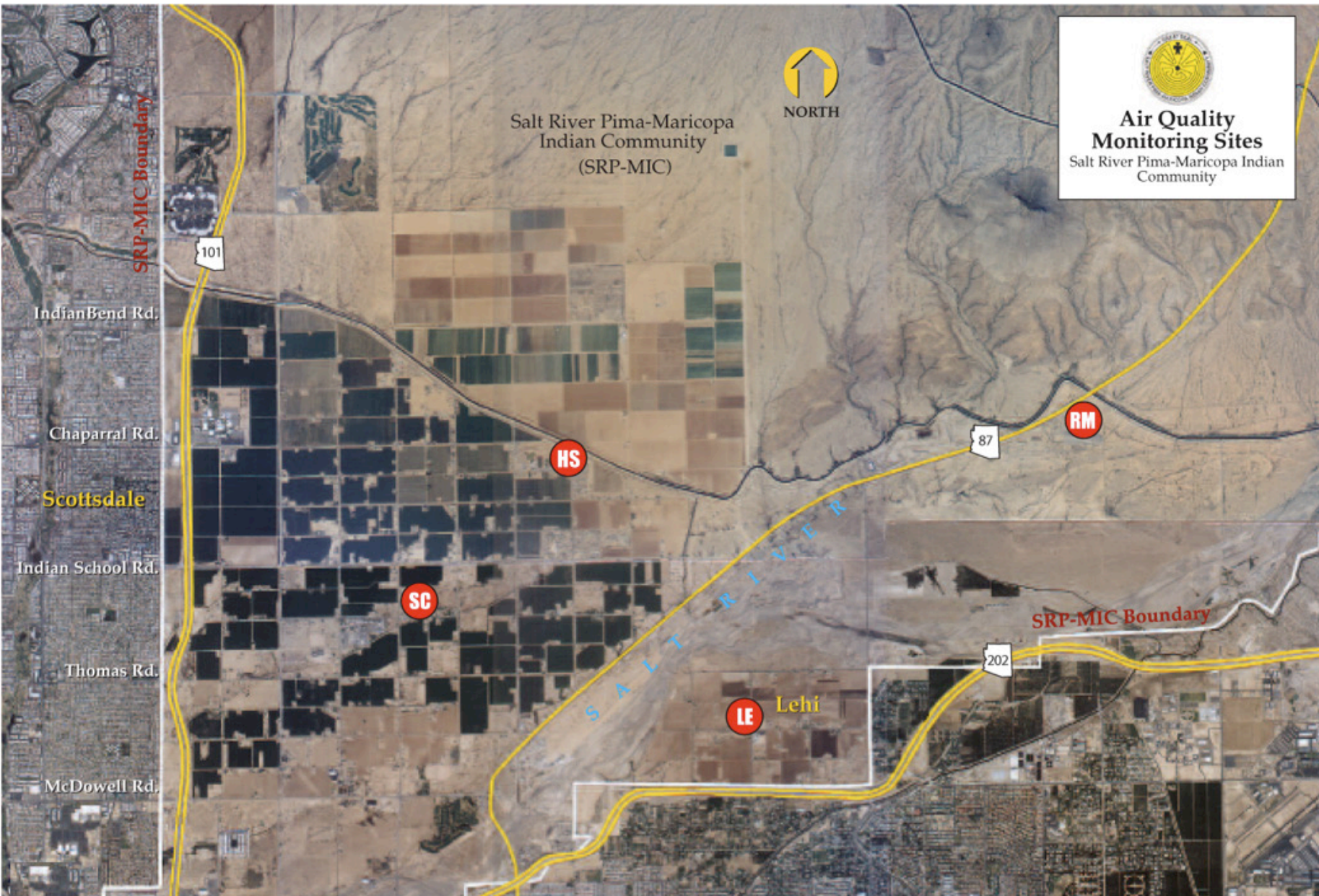
Site Name	AQS Code	Site Type	Site Scale	Pollutants
Senior Center (SC)	04-013-7020	Population Exposure	Neighborhood	PM ₁₀ , PM _{2.5} , O ₃
Red Mountain (RM)	04-013-7021	Regional Transport, Max Ozone Conc.	Urban	O ₃
Lehi (LE)	04-013-7022	Population Exposure	Neighborhood	PM ₁₀ , O ₃
High School (HS)	04-013-7024	Population Exposure	Neighborhood	PM ₁₀ , O ₃

1.2 Climatology

SRPMIC receives on average approximately seven inches of rainfall annually. The climate is warm, typically with low humidity. The Salt River Valley in Central Arizona typically has relatively calm winds but does occasionally experience significant winds that can result in blowing dust. The meteorology associated with these winds includes synoptic scale systems such as frontal passages, strong pressure gradients, and regional monsoon storms or microscale storm cells that form locally.

The frontal passages are typically associated with strong Pacific Northwest low pressure systems that develop over the northern Pacific Ocean and move southeast into the western US. Strong winds in advance of the cold fronts can reach speeds over 30 mph which cause significant areas of blowing dust in central Arizona. Additionally the duration of the strong, gusty winds can last up to 8 hours which contribute to elevated hourly PM₁₀ concentrations.

Pressure gradient exceptional/natural events result from strong high pressure building over the western US and low pressure to the east. As the high pressure builds a pressure differential is created causing strong winds over Arizona. The result is blowing dust developing locally in addition to transported dust from neighboring areas surrounding SRPMIC. Also, similar to frontal passages, duration of strong, gusty winds can last several hours. The combination of the long duration of transported dust and locally derived dust can overwhelm PM₁₀ monitors.




**Air Quality
Monitoring Sites**
Salt River Pima-Maricopa Indian
Community

The monsoon is a seasonal wind that takes place in the southwestern US and northern Mexico during the summer months. The typical diurnal winds along the Salt River in central Arizona are 'drainage' in nature: easterly winds originating from the mountains in the morning switch to westerly winds in the afternoon due to the heating of the desert floor. However during the monsoon, winds will shift to an easterly to southeasterly direction. This is due to a ridge of high pressure that sets up over the 'four corners' area. The result is an influx of atmospheric moisture from the south and east and storm development. The storm development can be synoptic in nature as large lines of storms form either over the Mogollon Rim or northern Mexico/southern Arizona and move into the Salt River Valley. Additionally, monsoon storms can be local in nature with the formation of localized monsoon supported storm cells. Either monsoon setup can pack significant winds (reaching gusts over 60 mph) that cause dust storms to develop and transport dust tens to hundreds of miles (a.k.a. Haboob) and have similar dust causing effects as frontal passages, and strong pressure gradients.

The monsoon season, as defined by the National Weather Service, starts on June 15th and lasts through September 30th. The large scale Haboobs that form are more frequent at the beginning of the monsoon and subside as the monsoon progresses and measurable rainfall occurs. The typical times of year that each meteorological setup results in exceptional/high wind events in Central Arizona are:

- Frontal passage – Spring (March-April)
- Strong pressure gradients – Fall (September-November)
- Monsoon – Summer (June-September)

The driest time period of the year for the Salt River Valley is April through June followed by September through November. The two meteorological regimes which are enhanced by the lack of precipitation are frontal passages (especially in April) and monsoon.

1.3 Geography and History

SRPMIC is a federally recognized sovereign tribe created by Executive Order on June 14, 1879. The Community is located approximately 15 miles northeast of Phoenix in Maricopa County, Arizona and is bordered by the cities of Scottsdale, Tempe, Mesa and Fountain Hills. The Community encompasses 52,600 acres, and also borders the Fort McDowell Yavapai Nation. Both reservations are adjacent to the Tonto National Forest.

The Community has an elevation of approximately 1,220 feet above sea level. The topography is primarily flat desert terrain, with several mountain ranges located 10-20 miles away. These mountain ranges are isolated, and the Community does not have geographical or topographical barriers limiting air-pollution transport within its boundaries. The majestic Red Mountain can be seen throughout the Community and is located on the eastern boundary. The sight of the mountain symbolizes the home of the Pima and Maricopa people.

The people of the Community are two pre-American Sovereign Indian tribes: the Pima ("Akimel Au-authm"-River People) and Maricopa ("XalychidomPipaash"-People who live toward the water). Although the two tribes speak different languages, they share cultural values. Historically, the Pima are descendants of the Hohokam (Hoo-hoogam), people who

farmed the Salt River Valley and created an elaborate canal irrigation system centuries ago. In contrast, the Maricopa originally lived along the lower Gila and Colorado Rivers and migrated toward Pima villages in 1825.

Today, over 10,000 individuals are enrolled tribal members. Comprised of the President, Vice President and seven elected Council members, the Community Council governs the Community. SRPMIC was granted Treatment as a State (TAS) by the EPA in 2008.

The Community has dedicated its resources to finding its way successfully through the maze of urban pressures. Out of respect for their land, the Community maintains 19,000 of its acres as natural preserve. The secondary land use is agriculture which supports a variety of crops including cotton, melons, potatoes, brown onions and carrots. Approximately 12,000 acres are under cultivation. Commercial development is reserved along the Community's western boundary.

The Community proudly owns and operates several successful enterprises including Talking Stick Golf Club, Talking Stick Resort, Salt River Fields, Salt River Devco, Casino Arizona, Salt River Sand and Rock, Phoenix Cement, Saddleback Communications, Salt River Financial Services, and Salt River Landfill.

1.4 NAAQS Status

There are approximately 16 air quality nonattainment and maintenance areas designated in Arizona. The Phoenix-Mesa-Scottsdale Core Based Statistical Area (CBSA) has four of these designations: 1-hour ozone (NAAQS no longer applicable), 8-hour ozone, carbon monoxide (maintenance area), and PM₁₀ (24-hour NAAQS). These air quality problems have an impact on the Community. SRPMIC has nonattainment status for PM₁₀ (serious designation; maintenance plan submittal pending) and 8-hour ozone (marginal). The State Implementation Plan (SIP) as it applies to SRPMIC does not make any SLAMS designations.

2.0 Data Evaluation

The purpose of the SRPMIC air monitoring network is to measure ambient concentrations of the selected criteria pollutants at various locations across the Community. These data are used to assess health and welfare effects and determine pollution sources both on and off the Community. The criteria pollutants measured are ozone (O₃), PM₁₀ and PM_{2.5}; the meteorological parameters include wind speed, wind direction, ambient temperature, delta temperature, and ambient pressure. The collection of these data began in 2002 and continues to date.

2.1 Ambient Trends

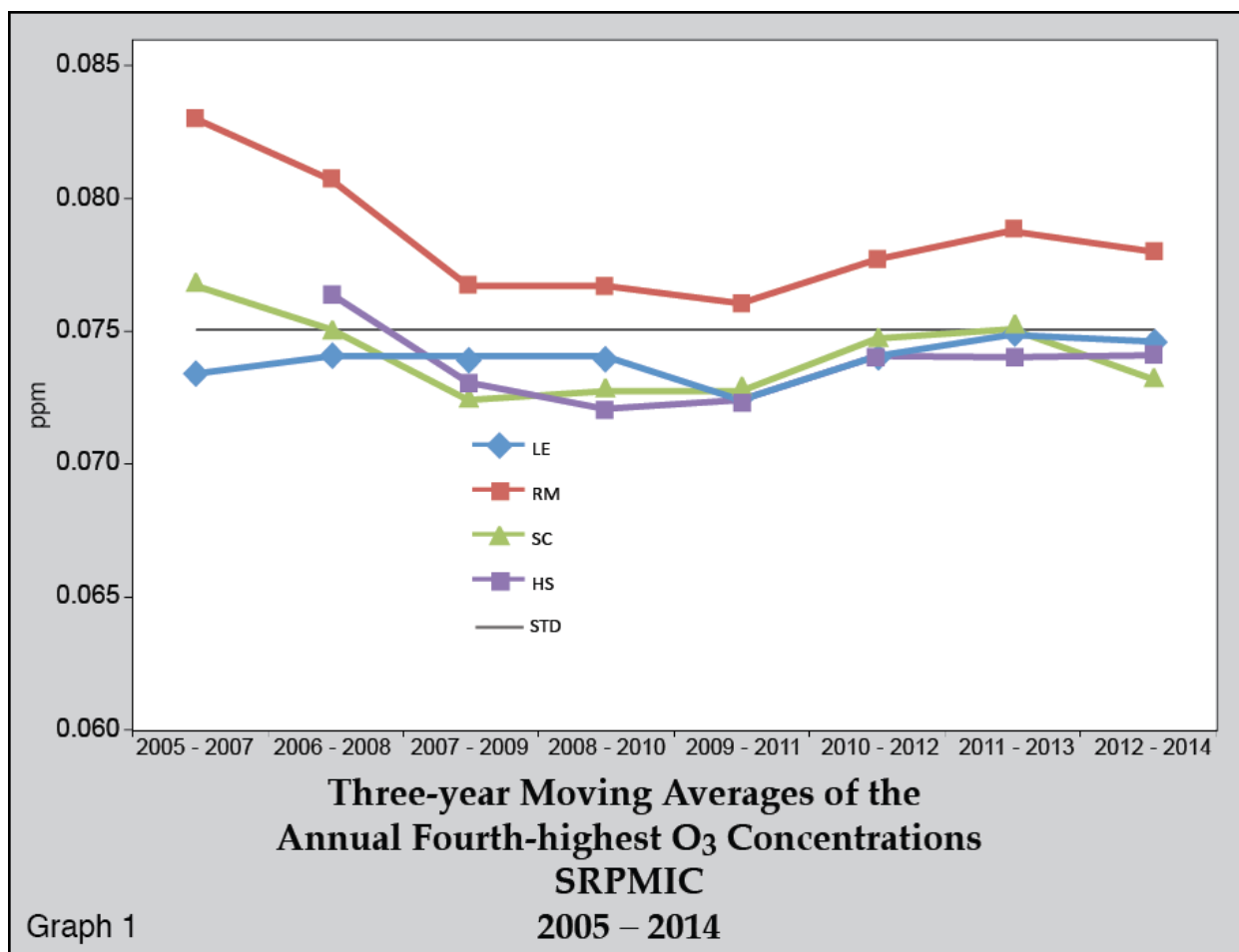
The air quality in the CBSA is generally improving despite the tremendous growth experienced in the region. Since monitoring began in the 1960s, ambient concentrations for most of the criteria pollutants have been reduced to below the NAAQS. Graphs of the trends seen in those criteria pollutants that are monitored on the SRPMIC are illustrated in Graphs 1 through 4.

The following sections provide a brief summary of pollutant concentration trends over several years. The purpose of including this section is to illustrate air quality improvement or decline over time. This information is valuable in the overall assessment of the monitoring network and its ability to represent population exposure.

2.1.1 8-Hour Ozone

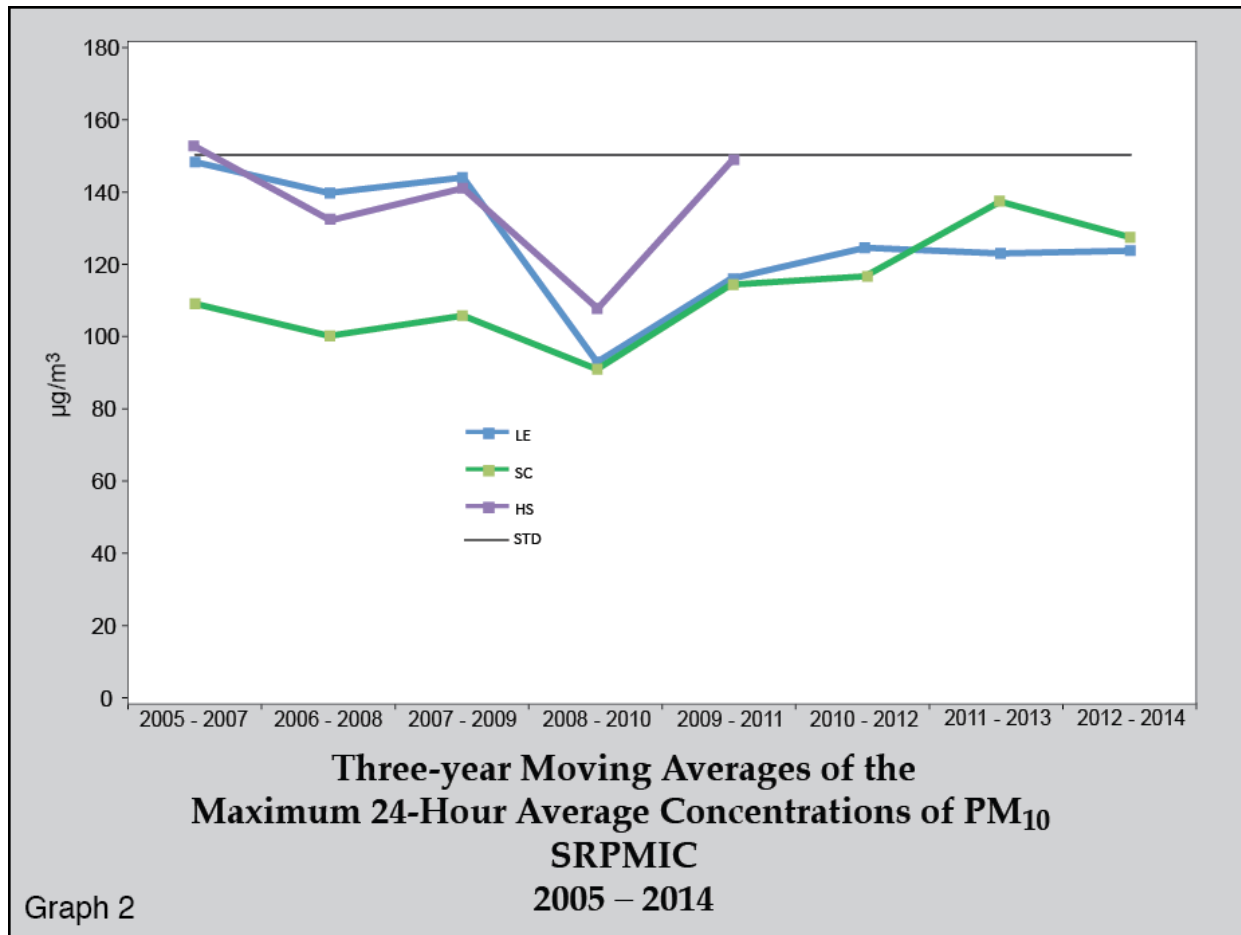
Eight-hour average concentrations of O₃ at the SRPMIC monitoring locations show a general decline in concentrations. The three-year moving averages of the fourth-highest 8-hour concentration at the four locations are illustrated in Graph 1. With the exception of the Lehi (LE) location, the trend in O₃ concentrations has been relatively similar at all of the monitoring locations.

The Red Mountain (RM) site has consistently recorded concentrations above the current 8-hour O₃ standard (0.075 parts per million [ppm]), while the other three sites have recorded concentrations just below that standard. EPA is expected to revise the 8-hour O₃ standard by October 1, 2015 and if the standard is lowered, all four monitoring sites will likely record 8-hour O₃ concentrations above the new standard.



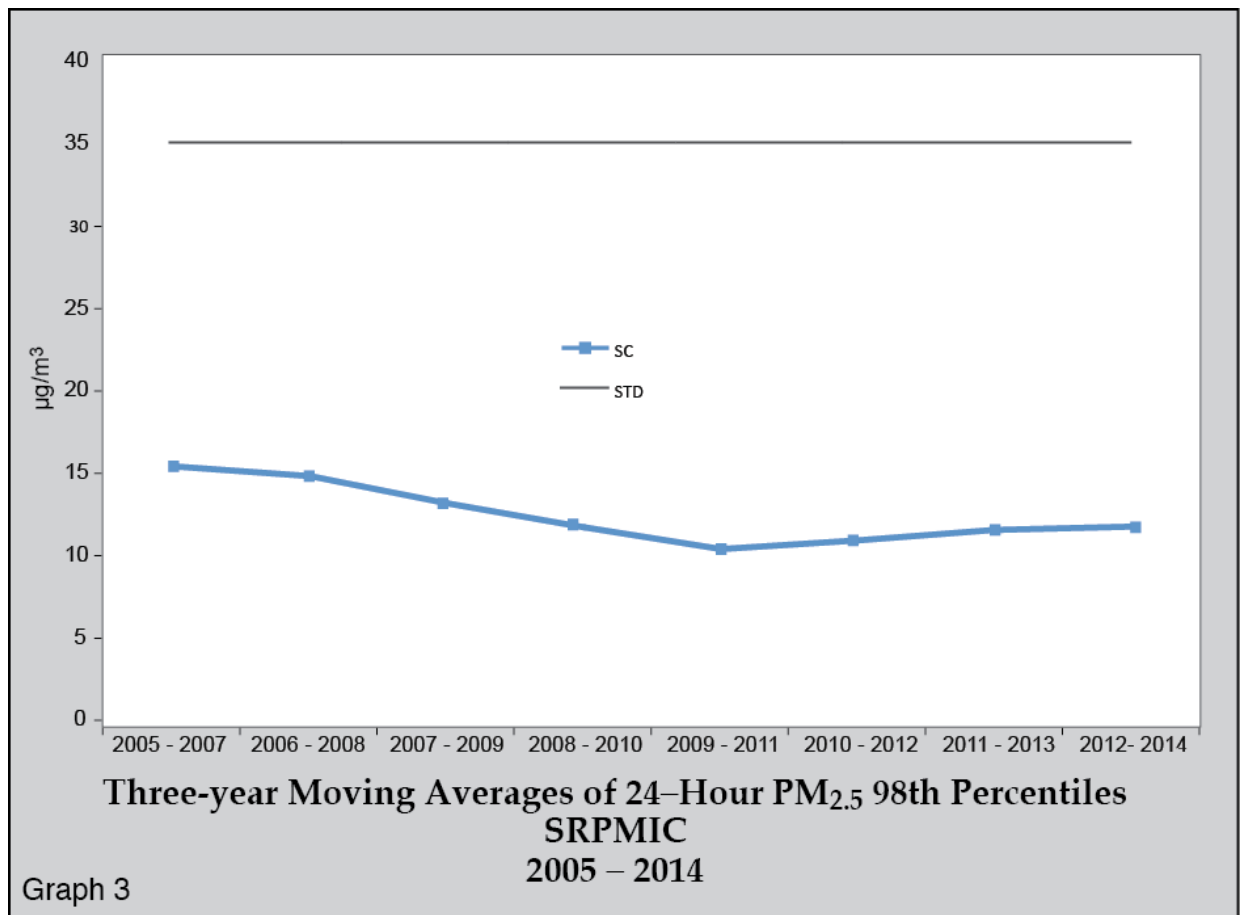
2.1.2 24-Hour PM₁₀

Maximum 24-hour average concentrations of PM₁₀ at the three SRPMIC monitoring locations have remained below the standard (150 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) since 2006 if exceptional event data are excluded. A sharp decline occurred during 2008-2010, followed by a steady increase through 2014. A graph of the trend is provided in Graph 2.



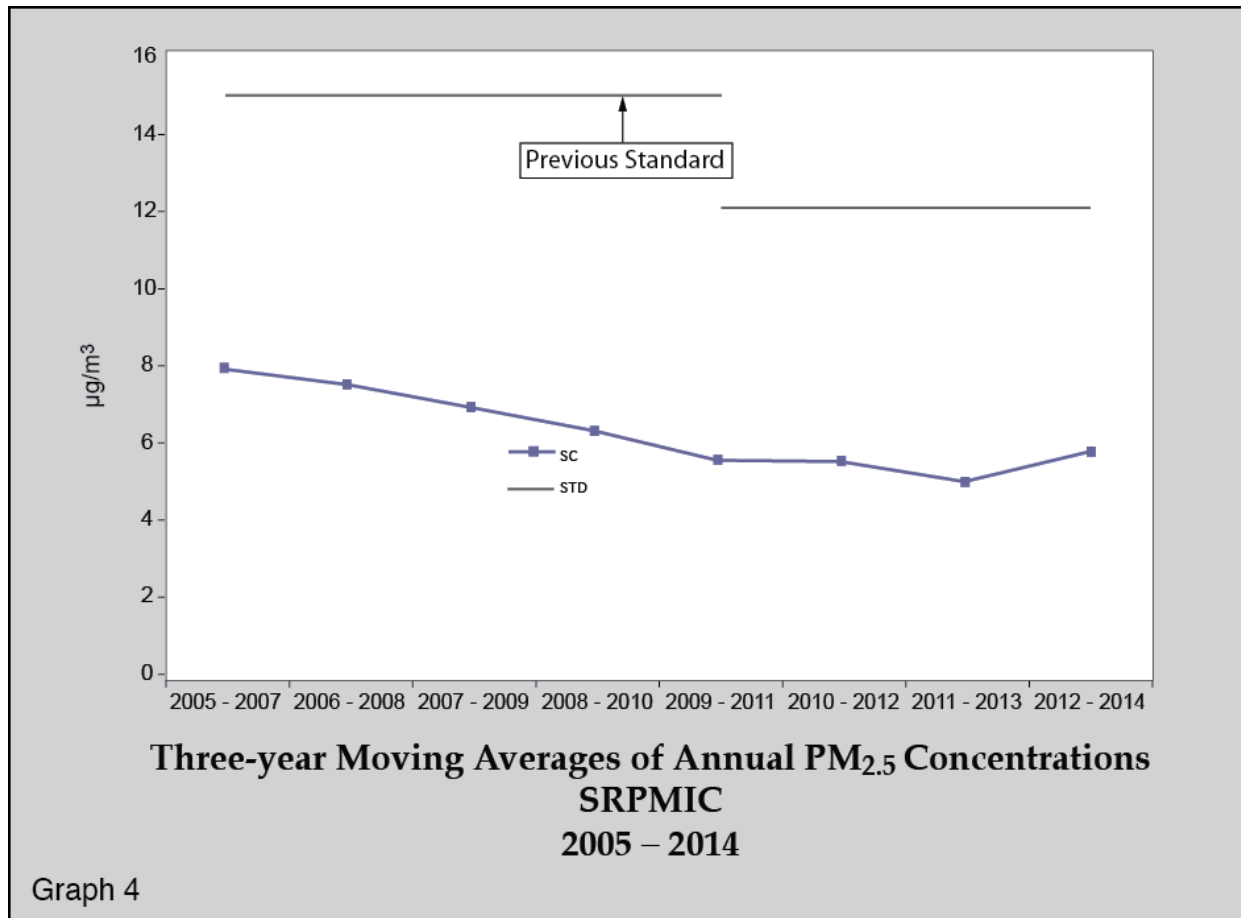
2.1.3 24-Hour PM_{2.5}

Concentrations of PM_{2.5} on SRPMIC have remained below the 24-hour standard (35 µg/m³). A graph of the three-year moving averages of the 98th percentile of the 24-hour average concentrations is provided in Graph 3. Data collected during 2007 were included in the moving averages for the Senior Center site although data recovery for that year was less than 75%.



2.1.4 Annual PM_{2.5}

Annual average concentrations of PM_{2.5} at the SRPMIC Senior Center have shown a general decline since 2005, although a slight increase occurred during 2012-2014. A graph of the three-year moving averages of the annual PM_{2.5} concentrations is provided in Graph 4. Data collected during 2007 were included in the moving averages although data recovery for that year was less than 75%.



2.2 Population

There are currently over 10,000 enrolled tribal members, although not all live within the reservation boundaries. Based on the document “Demographic Analysis of the Salt River Pima-Maricopa Indian Community Using 2010 Census and 2010 American Community Survey Estimates” (Arizona Rural Policy Institute Center for Business Outreach, W.A. Franke College of Business, Northern Arizona University), the population on the Community decreased slightly (-1.8%) in 2010 when compared to 2000. The SF1 census is considered the official count, and accounts for only the population within the exterior boundaries of the Community tribal lands. Both the state (24.6%) and the county (24.2%) grew rapidly between the census in 2000 and 2010 (see Table 2.2). The rate of population growth in Maricopa County is the highest in the State and one of the highest in the Nation.

The Community is dominated by those under 18 years of age. The under-18 population accounts for 29.8% of all tribal members, representing a similar proportion for that age group compared to the State (25.5%) and Maricopa County (26.4%). The fact that almost one-third of the tribe is younger than 18 years of age carries with it important policy implications. On the other hand, the tribe has a higher percentage of members who are 65 years or older as a proportion of the total population. This age group, those who have retired and are out of the workforce, accounts for 17% of tribal members compared to 13.8% for the State and 12.1% for the County. The Salt River Pima-Maricopa have a slightly different age profile than other Arizona tribes, with this greater percentage of tribal members over 65 years of age. Finally, those age 18 to 64 years account for 53.1% of the tribal members, which is lower than the State (60.7%) and the County (61.5%).

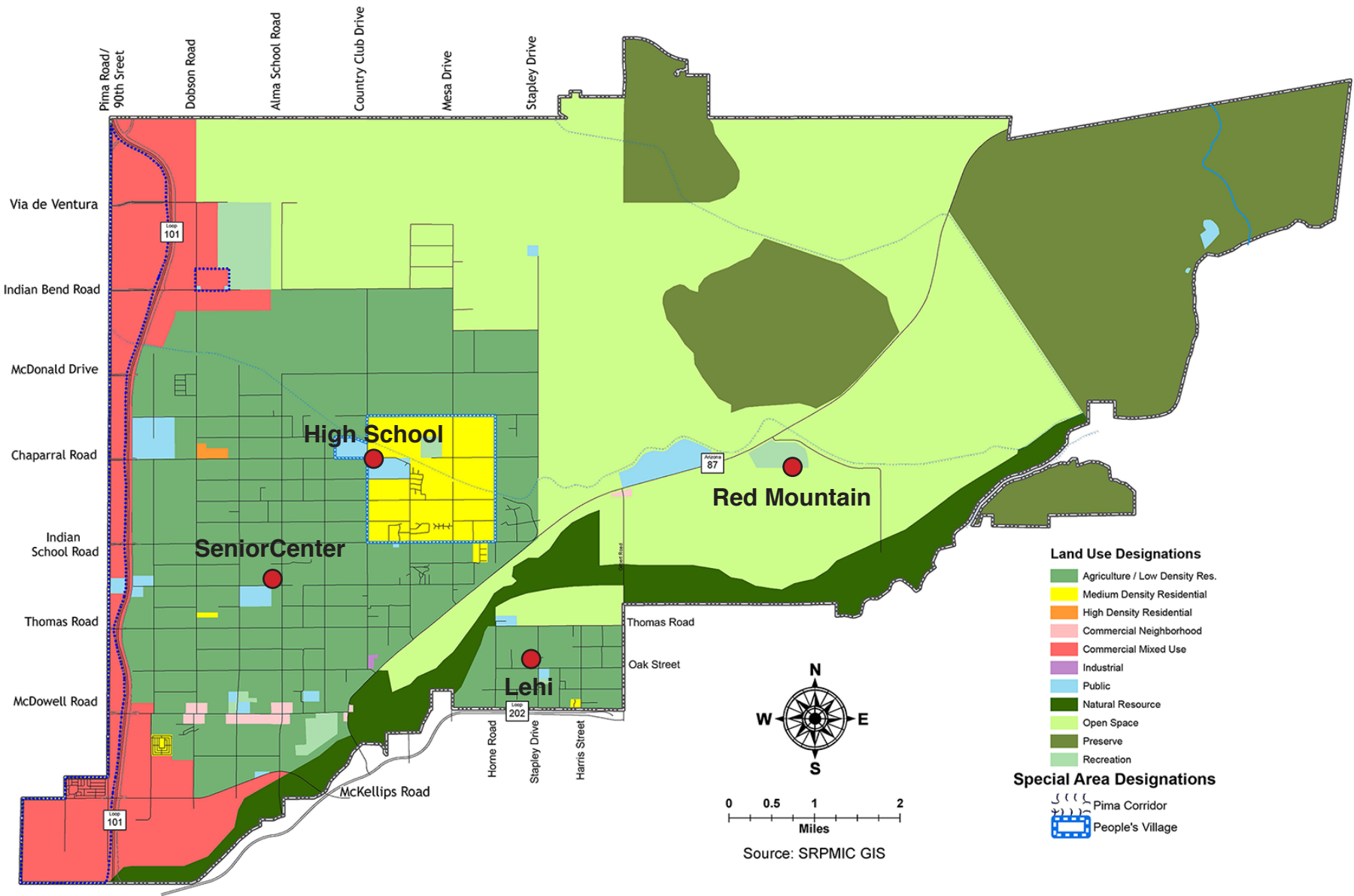
Table 2.2. Total Population & Trends

	Arizona	Maricopa County	SRPMIC
Total Population 2000	5,130,632	3,072,149	6,405
Total Population 2010	6,392,017	3,817,117	6,289
Change in Population 2000-2010	24.6%	24.2%	-1.8%

Source: Census 2000, 2010 SF1

There are no distinct towns or settlements within the Community. There are residential areas, along with Community facilities located near the Lehi, Senior Center and High School monitoring sites (see Figure 3). The Lehi Community Recreation Building is diagonally across the intersection from the Lehi monitoring site, which is inside the Police/Fire Substation. The site is bordered on the north and east by agricultural fields, on the west by neighborhood homes, a Booster Pump Facility to the north and the Community Recreation Center directly south.

The Senior Center site is situated in the midst of neighborhood homes with agricultural fields to the south and sparse open fields to the north. The site is located just west of the Senior Service Center at the northeast section of Osborn Road and Alma School Road approximately one half mile from the Two Waters Administration Tribal Complex. The High School site has an Elementary School to the southeast, residential homes constructed to the east, several new school ballparks to the east, and currently there is a proposed plan for a Junior High School to the north. The Central Arizona Project Aqueduct Canal borders along the north section and surrounding the area are open agricultural fields to the north and south.



Land Use Map
SRPMIC

2.3 Emissions

There are relatively few air pollution emission sources on the Community. The majority of emissions come from industrial sand and gravel operations, landfill operations, and vehicular traffic (SRPMIC Emissions Inventory Report, 2013). Agricultural operations also produce fugitive emissions, especially during tilling and harvesting.

The sand and gravel facilities are located along the banks of the Salt River. On-road emissions come primarily from urban interstate traffic, which includes Arizona State Route Loop 101 and Arizona State Highway 87 (Beeline Highway). There are also on-road emissions from local paved and unpaved roads on the Community. Sources outside the Community with potential air quality impacts include encroachment and growth from Scottsdale, Mesa, Tempe, and sources of air emissions off the Community from industries and construction operations from the surrounding municipalities (see Figure 4).

Below are results from the SRPMIC 2013 emissions inventory:

Point Sources

- The largest pollutant emitted from Point-Sources was PM₁₀.
- Casino Arizona was the largest emitting Point Source for Carbon Monoxide (CO).
- Salt River Elementary School was the largest Point Source for Ammonia (NH₃).
- A&A Materials Group was the largest Point Source for PM₁₀.
- A&A Materials Group was the largest Point Source for PM_{2.5}.
- Salt River Landfill was the largest Point Source for Sulfur Dioxide (SO₂).
- Salt River Landfill was the largest Point Source for Volatile Organic Compounds (VOCs).

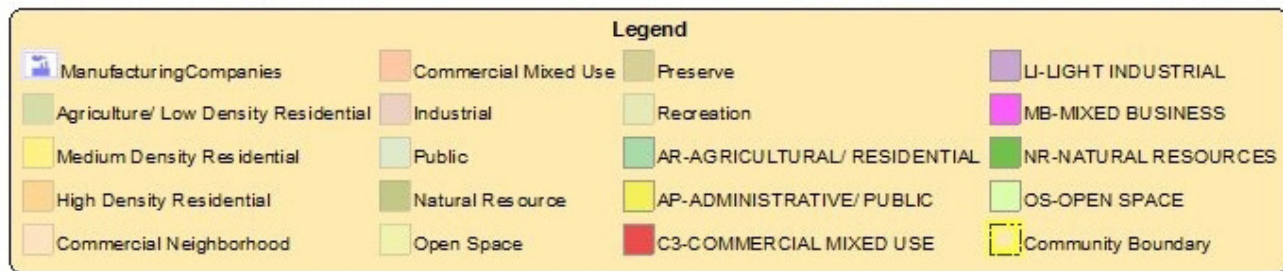
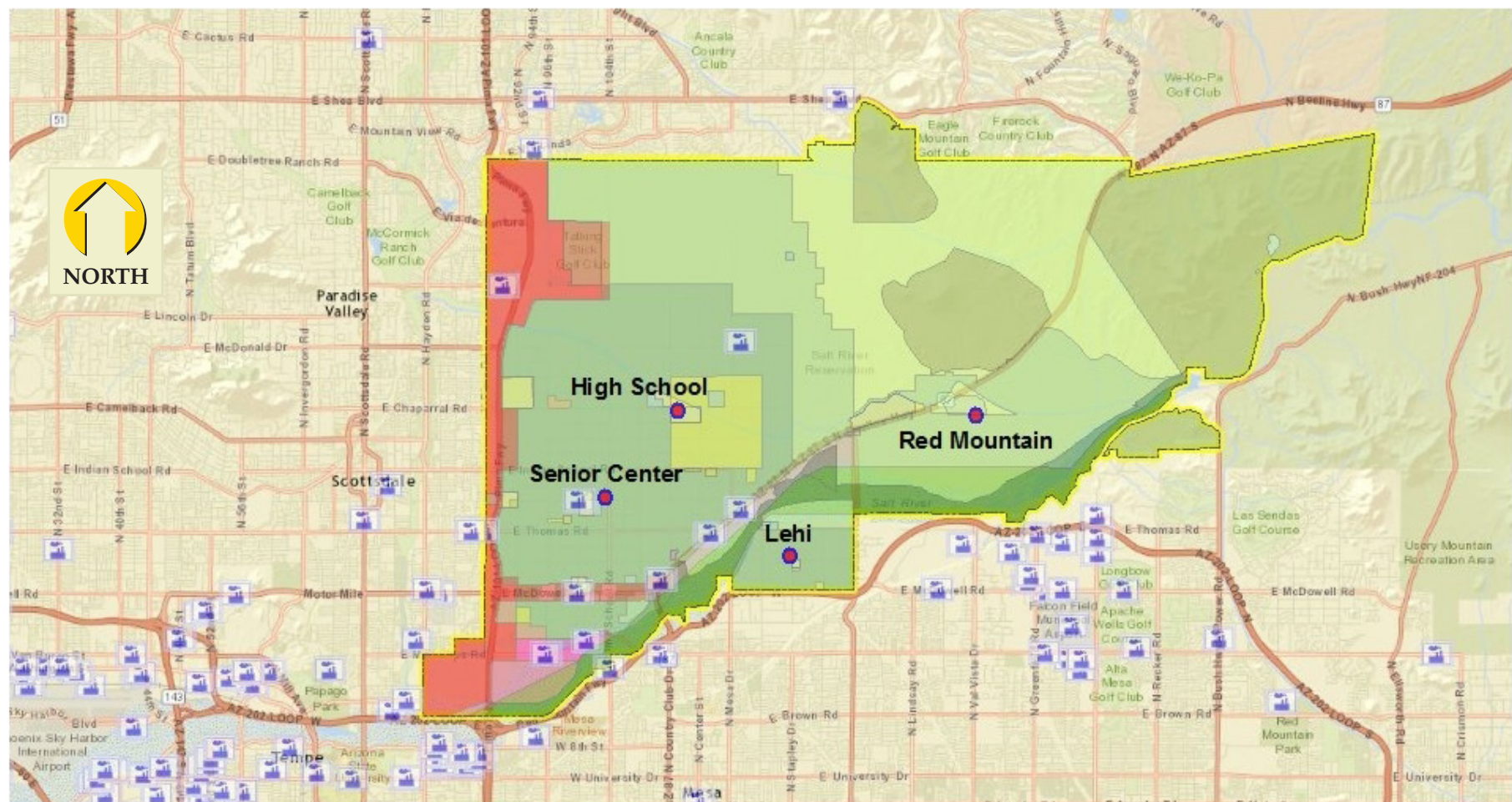
Non-Point Sources

- Non-Point Sources consisted of seven gasoline service stations in the Community
- Throughput values were entered into the Tribal Emissions Inventory Software Solution (TEISS) calculators and emissions estimates resulted.
- Volatile Organic Compounds (VOCs) were the largest source of emissions.
- The largest source of emissions resulted from displacement loss/uncontrolled emissions from the gasoline service stations.

On-Road Sources

- The largest source of emissions in the Community is On-Road mobile sources.
- Urban Interstate (Loop 101) traffic was the major emitter of pollutants followed by Urban Principal Arterial traffic (Beeline Highway).

Other sources of air pollutants on the Community include fuel combustion for home heating, fires, open burning, and windblown emissions.



Date: August 18, 2015

Author:

Created on: Azimuth GPM

**Air Monitoring Stations
and Emission Sources On and Near the SRPMIC**

3.0 Network Evaluation

3.1 Decision Matrix

The evaluation of the current monitoring network is shown in Table 3.1 below. The initial screening question asks if the monitoring site is located in a non-attainment area (all of them are), followed by whether the specific monitor is currently at or exceeding the NAAQS (including exceptional event data). A response of “Yes” to both removes the monitor from further consideration. The only monitor that passes through this screen to the next is Senior Center PM_{2.5}.

Table 3.1

Site Name	AQS Code	Site Type	Site Scale	Pollutants	Exceeding?
Senior Center (SC)	04-013-7020	Population Exposure	Neighborhood	PM ₁₀ PM _{2.5} O ₃	Yes No Yes
Red Mountain (RM)	04-013-7021	Regional Transport, Max Ozone Conc	Urban	O ₃	Yes
Lehi (LE)	04-013-7022	Population Exposure	Neighborhood	PM ₁₀ O ₃	Yes Yes
High School (HS)	04-013-7024	Population Exposure	Neighborhood	PM ₁₀ O ₃	Yes Yes

The second screening question asks if the Senior Center PM_{2.5} monitoring site passed through from the previous screen is necessary to represent a populated area in the Community, or if other sites adequately represent the air quality of the area. Additionally, PM_{2.5} data are considered important for health impacts in populated areas. The result of this screening question is the conclusion that the Senior Center PM_{2.5} monitor is an essential part of the network. It represents a nearby residential area and a vulnerable population (senior citizens). It is also currently the only PM_{2.5} monitoring site. Therefore, no changes to the existing air monitoring network are recommended.

Potential New Site Evaluation

The evaluation of potential new monitoring sites or locations is ongoing, and will be based on any changes to population centers or emissions sources. At this point, no new monitoring sites are recommended for the Community. Figure 2.2 illustrates the spatial relationship between the populated areas and air monitoring sites. The results of this screen will be evaluated further to determine if future monitoring is warranted in these areas.

Proposed Changes to the SRPMIC Air Monitoring Network:

The Air Quality Program (AQP) installed a PM₁₀ FRM (R & P Partisol 2000) collocated monitor on March 2015 for the Lehi PM₁₀ FRM primary monitor. A PM₁₀ Thermo 1405 TEOM monitor is proposed for installation in the fall of 2015 to monitor side-by-side with FRMs for the remainder of 2015; eventually this TEOM will be the PM₁₀ monitor and filter based monitoring will be discontinued at Lehi.

The AQP installed a PM_{2.5} inlet section on the monitoring shelter at the Senior Center in 2014 in preparation for the PM_{2.5} Thermo 1405 FDMS TEOM continuous monitor. The site is the only location that monitors PM_{2.5} with a primary and collocated R&P FRM 2000. The AQP is planning to operate the 1405 FDMS monitor at this location in 2016. Eventually the TEOM will be the primary PM_{2.5} monitor at the Senior Center site.

The utilization of the data management system AirVision will continue to be expanded as some software modules are scheduled to be integrated for data reporting by the end of 2015. AQP is anticipating use of a Response Notification System to alert staff to high pollution concentrations from real-time air quality data to ensure that potential high measurements are inspected immediately.

The AQP is currently evaluating the need for a meteorological system and is proposing to utilize an all-in-one meteorological system at the High School site. The AQP is also anticipating the use of a video camera system to capture images of dust producing activities and visibility conditions at the High School site. This site is designated as a high concentration site for PM₁₀ pollution.

3.2 Seven-Point Network Assessment

40 Code of Federal Regulations (CFR) Part 58.10 (d) requires an air monitoring network assessment to be conducted on a 5-year cycle. As provided in the regulation the 5-year monitoring network assessment must address the following:

1. Document that the network meets the monitoring objectives defined in Appendix D to 40 CFR Part 58.
2. Evaluate the need for new monitoring sites.
3. Evaluate if existing sites are no longer needed and can be terminated.
4. Determine if new technologies are appropriate for incorporation into the ambient air monitoring network.
5. Consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma).
6. For any sites that are being proposed for discontinuance, consider the effect on data users other than the agency itself, such as nearby States and Tribes or health effects studies.
7. For PM_{2.5}, the assessment also must identify needed changes to population-oriented sites.

In the following sections an item by item review of the seven points will be addressed utilizing information provide in this document and the “SRPMIC 2014Air Monitoring Network Review.”

1 - 40 CFR Part 58 Appendix D Compliance

EPA regulations require the agency to document that the network meets the monitoring objectives defined in Appendix D to 40 CFR Part 58. The reader is referred to the “SRPMIC 2014 Air Monitoring Network Review” wherein compliance with Appendix D is affirmed for all current sites.

2 - Evaluation of the need for new monitoring sites

Point number two requires evaluation of the need for new monitoring sites. This evaluation was conducted as described in Section 3.1. The initial indication from this evaluation is that additional PM_{2.5} monitors may be needed in the future, but the current sites are adequate to represent population impacts.

3 - Evaluation of sites that can be terminated

Point number three requires evaluation of the possibility for existing sites to be terminated. This evaluation was conducted using a decision matrix and is described in Section 3.1. The indication from this evaluation is that no sites can currently be terminated based upon the evaluation criteria.

4 - New Technologies

The fourth point requires the AQP to consider if new technologies are appropriate for incorporation into the ambient air monitoring network. New technology is definitely appropriate for the network. Specific instruments and products include: additional continuous PM₁₀ and PM_{2.5} instruments to replace filter-based where feasible; new ozone analyzers and standards; updated dataloggers and wireless communication devices; improved data collection and quality assurance applications; ambient database applications; addition of a Response Notification System to alert staff to high pollution concentrations from real-time air quality data to ensure that potential high measurements are inspected immediately; and public reporting applications. Implementation of these items depends on future funding.

5 - Consideration of Network to Represent Susceptible Individuals

Point number five requires consideration of the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals. A substantial portion of the Community population is represented by an existing air monitoring site. Currently PM_{2.5} is measured at the Senior Center which is near the largest residential area on the Community, and represents potential impacts to children and the elderly.

6 - Effect of Closed Site(s) on Data Users

No sites are currently being proposed for closure.

7 - Assessment of Changes Needed to PM_{2.5} Population-Oriented Sites

Point seven requires the assessment to identify needed changes to PM_{2.5} population oriented sites. SRPMIC currently measures PM_{2.5} at the Senior Center which is near the largest residential area on the Community, and installation of a continuous PM_{2.5} monitor is planned for the future. Based on the current population and projected growth of the Community, it is unlikely that an additional monitoring site will be added. There are several nearby Maricopa County Air Quality Monitoring sites for PM_{2.5} that would ensure maintenance of minimum monitoring requirements under 40 CFR Part 50. Currently the CBSA is in attainment of the PM_{2.5} NAAQS.

4.0 Conclusions

The process of developing and implementing this SRPMIC Air Quality monitoring network evaluation lead to several conclusions regarding the current air monitoring network and potential changes in the future. Other considerations for future changes include site safety, vandalism, and leasing issues; potential new emissions sources; population projections; site proximity to proposed freeways with planned expansion and increased traffic; and additional automation of PM monitoring for real time data reporting and forecasting. Monitoring equipment issues were identified, including the need to replace filter-based with continuous PM_{2.5} monitors.

A primary result of the evaluation was a conclusion of limited changes in the existing SRPMIC PM₁₀, PM_{2.5}, and ozone networks. The CBSA is currently undergoing an evaluation process and the PM₁₀ nonattainment area will be a maintenance area with a 10-year plan, assuming the data remain below the 24-hour standard. No changes to the PM₁₀ network sites are being proposed other than additional automation. The ozone site evaluation also recognized that a tightened, but uncertain, ozone NAAQS standard will be implemented in the near future. The current ozone network adequately represents the Community based on the existing nonattainment status for ozone, also recognizing that MCAQD and Fort McDowell Yavapai Nation maintain ozone monitoring sites near the Community.

This evaluation illustrates that the spatial coverage of the network is well designed to represent the Community's population centers and various emission areas. The SRPMIC ambient monitoring network is part of the broader CBSA network which meets the required monitoring network design for number of sites. Other network monitoring sites near SRPMIC, operated by the Fort McDowell Yavapai Nation and Maricopa County, can also be used for spatial analysis and long term trends analysis.

PAMS monitoring requirements for the ozone non-attainment area are implemented by the Arizona Department of Environmental Quality (ADEQ). Maricopa County operates the required N-Core and near-road monitoring sites for the CBSA and has two operational near-road sites as required by EPA rules.

The population evaluation was based upon a review of population from the 2010 census and the spatial extent of the current network. When evaluating neighborhood scale PM exposure we observed that population and emissions are generally coincident, although there are a few exceptions. In addition to population and spatial representation, a decision to add or relocate sites and/or monitors should consider additional parameters such as emissions characteristics, pollutant transport and meteorology. A primary consideration will be adequate funding and resources to cover potential monitoring additions or changes. We will review any potential changes or additions in our next Annual Air Monitoring Network Review.

5.0 References

Census 2000, 2010 SF1. Demographic Analysis of the Salt River Pima-Maricopa Indian Community Using 2010 Census and 2010 American Community Survey Estimates” (Arizona Rural Policy Institute Center for Business Outreach, W.A. Franke College of Business, Northern Arizona University).

Accessed at: <http://azcia.gov/Documents/Links/DemoProfiles/Salt%20River%20Pima-Maricopa%20Indian%20Community.pdf>